Printed Page:- Subject Code:- AMTBT0115

Roll. No:

NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY, GREATER NOIDA

(An Autonomous Institute)

Affiliated to Dr. A.P.J. Abdul Kalam Technical University, Uttar Pradesh, Lucknow

M.Tech

SEM: I - THEORY EXAMINATION (2021 - 2022)

Subject: Nano Biotechnology & Toxicology

Time: 03:00 Hours Max. Marks: 70

General Instructions:

1. All questions are compulsory. It comprises three Sections A, B and C.

- Section A - Question No- 1 is objective type question carrying 1 mark each & Question No- 2 is very short type questions carrying 2 marks each.
- Section B - Question No- 3 is Long answer type - I questions carrying 4 marks each.
- Section C - Question No- 4 to 8 are Long answer type - II questions carrying 7 marks each.
- No sheet should be left blank. Any written material after a Blank sheet will not be evaluated/checked.

SECTION A 15

1. Attempt all parts:-

1-a. What is a buckyball? (CO1) 1

1. A carbon molecule (C60)
2. Nickname for Mercedes-Benz's futuristic concept car (C111)
3. Plastic explosives nanoparticle (C4)
4. Concrete nanoparticle with a compressive strength of 20 nanonewtons (C20)

1 Buckyballs are made up of (CO2) 1

1. nickel
2. DNA
3. RNA
4. carbon

1-c. When semiconductors are reduced to nanometres they become pure conductors. (CO3) 1

1. TRUE
2. FALSE

1-d. CVD stands for _____ (CO4) 1

1. Carbon vapour density
2. Chemical vapour density
3. Chemical vapour deposition
4. Carbon vapour deposition

1-e. Nano particles target the rare _____ causing cells and remove them from blood. (CO5) 1

1. Tumour
2. Fever
3. Infection
4. Cold

2. Attempt all parts:-

2-a. How are nanomaterials regulated? (CO1) 2

2-b. What are the uses of fullerenes? (CO2) 2

2-c. Write a short note on Atomic Force Microscope (AFM). (CO3) 2

2-d.	What are Nanoimaging agents? (CO4)	2
2-e.	Write a short note on Genotoxicity. (CO5)	2

SECTION B 20

3. Answer any five of the following:-

3-a.	Give some present and future applications of nanomaterials in biomedical science. (CO1)	4
3-b.	What do you mean by the term photolithography. (CO1)	4
3-c.	Highlight the properties of carbon nanotubes. (CO2)	4
3-d.	How quantum dot can be used to obtain nanoparticles assemblies with designed properties. (CO2)	4
3-e.	Explain UV-Visible Spectrophotometry. (CO3)	4
3-f.	Write short note on ‘C Dots’ (Carnell Dots). (CO4)	4
3-g.	Describe Toxicokinetics in detail. (CO5)	4

SECTION C 35

4. Answer any one of the following:-

4-a.	Describe microfabrication technique briefly. (CO1)	7
4-b.	Write a note on macromolecular Assemblies. (CO1)	7

5. Answer any one of the following:-

5-a.	What is green synthesis?Describe the green synthesis of metal nanoparticles. (CO2)	7
5-b.	Discuss Lithography. (CO2)	7

6. Answer any one of the following:-

6-a.	Explain SEM & TEM in detail. (CO3)	7
6-b.	Discuss in detail about Atomic Force Microscopy instrumentation,parameters measured and imaging modes? (CO3)	7

7. Answer any one of the following:-

7-a.	Briefly discuss the applications of biosensors. (CO4)	7
7-b.	Tha nanobiotechnology is playing an important role in the field of drug delivery? Justify your answer with the help of suitable examples. (CO4)	7

8. Answer any one of the following:-

8-a.	What is nanotoxicology? How it affect the health of living organism? (CO5)	7
8-b.	How Toxicity in assessment can be done? Explain Hepatoxicity in detail. (CO5)	7